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SOCIOLOGICAL NOTES.

Social Economy (Group 16) at the Paris Exposition. It is interesting to note the appointment of Professor Edward D. Jones, of the University of Wisconsin, and a member of the American Academy of Political and Social Science, as a juror in the Social Economy Group Professor Jones has been in Paris since the at the Paris Exposition. middle of last February engaged in installing the exhibits in Social Economy, the chief features of which are: (1) An exhibit of model tenement house plans, photographs of present conditions, etc., by Mr. Veiller, chairman of the Housing Committee of the New York Charity Organization Society; (2) an exhibit of the Social and Industrial Conditions of the American Negro, under the supervision of Mr. Calloway, of Washington; (3) an extensive and systematic exhibit of photographs, administration blanks and other literature of charitable institutions and societies, under the charge of Mr. Homer Folks and Mr. H. S. Brown, of New York City; (4) a large collection of photographs and lantern slides, illustrating the movements inaugurated by employers for improving the condition of their employees, provided by the League for Social Service; (5) a library of the publications of state labor bureaus, loaned by Hon. Carroll D. Wright; (6) a set of 100 large maps of the United States, showing the location of industries and industrial establishments in the United States; (7) a collection of photographs, lantern slides, charts and publications showing the equipment of various industries in the United States, and the conditions of wage earners while at work.

Exhibits numbers 6 and 7, as indicated above, were prepared by Professor Edward D. Jones. In addition to these exhibits a series of monographs, carefully prepared by various authors, gives a review and description of the general economic conditions in the United States, and describes the more important social and economic movements of our country. An edition of 2,000 copies of these monographs printed in English will be distributed.

In the attempt to represent the social-economic condition of our country the following means have been relied upon:

- 1. Photographs.—A very large number will be shown, thanks to the wing frame employed, which permits the showing of thirty-three cards in the wall space which one picture would occupy.
 - 2. Charts.—Putting into graphic form selected statistics.
- 3. Lantern Slides.—Our space will have a stereopticon in operation during the day and evening, throwing a brilliant picture of small size upon a ground glass screen.

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- 4. Maps of the United States, showing the physical conditions which influence industry, and showing in detail the location of industries. These will be mounted in two cases of new design, each holding forty maps.
 - 5. Literature for Examination.—Books, reports, trade papers, etc.
- 6. Literature for Distribution.—The monographs written by experts and published at the expense of the government.

The latest revised list of International Congresses, dealing with some phase of the social sciences and held in the rooms on the second floor of the Social Economy building, is as follows:

June 25-30. Congrès des Accidents du travail et des Assurances sociales.

June 25-30. des Actuaires.

July 30-Aug. 5. d'Assistance publique et de bienfaisance privée.

Aug. 5. des Aveugles (pour l'amelioration du sort).

July 23-28. de la propriété industrielle.

July 3. de la protection lègale des travailleurs.

Oct. 9-12. du repos du demache.

July 15-17. des Sociétés co-operative de consummation.

--- des Sociétés de la Croix Rouge.

Aug. 6-11. de sociologie coloniale.

Aug. 6-8. des Sourds-Muets.

July 8. des Syndicats agricoles.

Aug. 20-25. du Tabac (contre l'abus).

Sept. 10-12. des Traditions populaires.

Sept. 10-13. des Tramways.

June 4-7. des Valeurs mobiliéres.

July 8-11. des Voyageurs et representants de commerce.

July 18-22. de l'Alliance co-operative international.

July 11-13. des Associations ouvrieres de production.

July 23-28. du Commerce et de l'Industrie.

July 8-10. du Credit populaire.

July 31-Aug. 4. de Droit compare.

July 19-21. des Ecoles superieures de commerce (des Associations des anciens eleves).

Sept. 6-9. de l'Education sociale.

July 30-Aug. 3. de l'Ensignement des Sciences sociales.

Aug. 6-11. de l'Ensignement technique, commercial et industriel.

Aug. 26-Sept. 1. Ethnographiques (des sciences).

Sept. 5-8. des Femmes (de la condition et des droits). Aug. 27-31. de Geographie economique et commerciale.

June 18-21. des Habitations à bon marché.

July 23. d'Histoire comparée.

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Aug. 10-17. d'Hygiène.

Aug. 4-12. de la Marine marchande.

June 7-10. de la Mutualité.

June 18-23. des Oeuvres et institutions feminines.

Sept. 29-Oct. 6. de la Paix.

July 15-18. de la Participation aux benefices

July 9-12. du Patronage des libérés.

July 11-13. du Patronage de la jeunesse ouvrière.
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Criminal Statistics in Denmark, 1891-96.1—According to a governmental publication regarding the administration of criminal justice in Denmark (1891-96), (Nationalökonomisk Tidsskrift, Iste Hefte 1900.) it is stated that the number of cases prosecuted was 3,881 (3,018 men and 863 women). Persons fined in police court were 44,700 in number (20,700 in Copenhagen), against 25,700 ten years earlier, and 12,200 twenty years before. The annual average of condemned

criminals over ten years of age was, during the period 1891–96, 6,374 men and 124.9 women per 100,000 population; 785.3 men and 372.2 women per 100,000 in Copenhagen.

Most of the crimes were connected with property; for murder and assault 283 men and 9 women were condemned; for infanticide, 4 men and 27 women. A table, arranging criminals under age categories, shows a heavy preponderance of crime between the ages of 15 and 30. The greatest number of criminals, taking all Denmark, fall between the ages of 20 to 25 in both sexes; the next most criminal period is between 15 and 20. Taking Copenhagen, however, the period 15-20 shows the most criminals, after which the decline is steady; it is noteworthy that female criminals in Copenhagen are 20 per 100,000 population during the ages of 10-15, whereas between the ages of 15-20 this figure rises to 1064.3 per 100,000. In the whole country this rise is from 19.8 to 263.4 under like ages. The inference is clear.

Modes of punishment are illustrated by the following table:

Execution					. o.o3 per cent.
House of Correction					. 15.39 "
Imprisonment					. 69.53 "
Forced labor					. 2.97 "
Corporal punishment					. 8.93 "
Various punishments					. 3.15 "

Execution was resorted to in 8 cases (3 men and 5 women) during 1891 -96. The three cases of the men were flagrant. The 5 women were executed for infanticide. Three of them murdered children born out of wedlock, and two were servants who killed the children of their masters.

¹Contributed by A. G. Keller. Ph. D., of Yale University.

The Protection of Danish Laborers. In 1873 Denmark stood second only to England in liberal enactments for the protection of labor, while now she is the most backward of the European industrial states and possesses the most antiquated regulations. Few and unimportant laws have been passed since 1873.

(1) "With reference to the industrial activities covered by protective measures at the present time, we come decidedly last in the list of European countries. (2) With reference to the minimum age for child labor in industries, we stand quite alone with our age limit of ten years. Excepting Italy, where physical development is attained much earlier in life, no other industrial country of Europe recognizes a lower age limit than that of twelve years. (3) With reference to the extension of protection to adults, we stand quite alone with our rule that health regulations do not independently apply to grown persons, just as our land is the only country—excepting Sweden—which in no way assures grown women an especial protection.

A bill now under discussion proposes to mend matters in all of these particulars. All industries which use mechanical power or employ over five hands, are required to take measures of protection. The regulated industries will thus increase in number from 2,900 to 7,200; protected laborers from 64,000 to 114,000; 27,000 industries employing 62,000 laborers remain unregulated. This change is important in comparison with existing conditions, but is not very radical when viewed in the light of the regulations of other European states. Denmark merely advances from the last to one of the last places.

Regarding children's labor, the age limit is to be raised from ten to fourteen years, the half-time school system being discontinued; school attendance and labor are separated. This would affect about 4,000 children. At first sight such a law seems quite radical, but when it is examined in the light of school-laws, it is seen that the principle is a common one. The limit is set where the common limit of education is placed; it is the school-law, not the proposed bill, that is radical.

Protection for adults, in general, is confined to detailed application along the lines of general legislation in 1873; the innovation consists in placing control in the hands of factory inspectors instead of health officers, and in the fact that health regulations apply to adults whether or not they labor together with minors.

The bill also seeks to introduce, for the first time, a special protection for women, this clause treating particularly of work on Sun-

¹Contributed by A. G. Keller, Ph. D., of Yale University.

² Frantz Pio; paper read before the Association of Political Economists, February 1, 1900. Nationalökonomisk Tidsskrift, 2det Heft., 1900.

⁸ Industrial census of 1897; the figures are approximate.

days and at night, and during the period including the birth of a child. A ten-hour day is insisted upon, and thus grown women are placed in almost the same category with minors. The former laws forbade all labor on Sunday; now it is forbidden only for the especially protected, i. e., women and the young. This latter proposition seems to apply only to the industries now to be brought under the system of protection; hence a mixed condition, without parallel in any other country, where Sunday labor is forbidden to men and women in some industries and only to women in others. The ten-hour enactment would affect about 16-17,000 women over eighteen years of age. The general maximum for female labor in other countries is eleven hours.

The author anticipates considerable opposition to this bill, especially upon the last named point.

The Statistics of Foreign Missions:—At the recent Ecumenical Conference on Foreign Missions held in New York City an inter-denominational committee, of which Rev. James S. Dennis, D. D., the well-known author of an encyclopedic work on "Christian Missions and Social Progress," is chairman, prepared a report on Centennial Statistics of Missionary Activity in Foreign Lands. The complete report will be printed in a forthcoming volume of the Conference Reports. The paper, printed for the use of the conference, contains. twenty-seven pages and gives some description of the plan pursued by the committee and some interesting summaries showing the magnitude of missionary undertaking which will interest social workers in all fields. The relative strength of different departments of foreign missionary work is the point of most general interest and unfortunately the point where least reliance can be placed in the statistics as given in the Preliminary Report of the committee. The task of the Committee is a most difficult one and it has done good pioneer work in pointing out the obstacles to successful statistics of missions. Yet it is safe to say that the results obtained do no more than indicate in a very general way the great magnitude of foreign missionary effort.

In the first place it is impossible to learn from the tables in the Preliminary Report or from the accompanying notes whether the figures are for a single year or for a period of years; if the reader is familiar enough with mission work to surmise from certain figures that the returns must be for a single year, he is still uncertain for which calendar year and whether all the figures relate to the same period of time. This is a serious defect which might have been easily

¹ To be had from Rev. James S. Dennis, D. D., 30, Lexington Ave., New York: City.

remedied by a few words of explanation. As a matter of fact the committee desired to give a statistical survey of missionary activity for a single year and that as near the end of the century as possible so that the result would show the status of mission work at the close of the nineteenth century. On this point Dr. Dennis has very kindly furnished the following explanation in reply to a letter of inquiry on the subject:

"The statistics in the paper for the Ecumenical Conference represent for the most part the returns for 1898. In some instances they are for 1897, and perhaps in a very few, where no later returns were available, those for 1896 have been inserted. I should judge, however, that four-fifths of the entries were for the official year of the society, ending in some instances December 31, 1898, and in others in the spring of 1899. It is impossible to present an absolutely synchronous statement of missionary returns, as the official years of the societies do not coincide, and there are always a few societies that, owing to infrequency of published reports, or inaccessibility, cannot stand in the same line with the great majority of missionary organizations in a statistical list. The above remarks apply especially to the statistical summaries of pages 15, 16, 17, and also to the special returns for various departments of missionary activity given on pages 19-27. In the case of individual institutions, educational, literary, medical, philanthropic and cultural, the latest available returns have been given, but in a few instances they go back from two to five years. as I had to choose between leaving the statistics blank or giving the latest that I could find. I think the statistical exhibit as a whole may be fairly described as representing the most recent available returns, in the main those of the year 1898. I hope before the publication of the statistical volume next fall to insert the statistics of a year later in the case of many societies, so that the tables when published will stand as a representation of the statistical exhibit of foreign missions at the close of the nineteenth century."

Among the more important explanations, given in the Preliminary Report, which are necessary to understand the statistical summaries, are the following:

"I. What is the scope of foreign missions? The expression 'foreign missions' is understood to apply to any more or less organized effort to lead the natives of unevangelized lands to the acceptance of a pure and saving form of Christian truth, and to lift their daily living into conformity with it. The scene of this missionary activity should be outside the land in which it originates, or, if it originates in so-called foreign lands, it should represent the efforts of foreign residents, or of already Christianized native churches, moved by the missionary

impulse to extend the gospel of Christ among unevangelized peoples. There may be a great variety in method, and a decided preference as to the instrumental agency employed, but only one governing purpose.

"This definition, it will be observed, excludes all mission effort in the home land where the society is located. Work among the Indians or the European and Asiatic immigrants of the United States and Canada should not, therefore, be reckoned among the foreign missionary operations of the societies of those countries; yet if efforts are made by such societies among the Indians of South America, the mission can be classified as foreign, since it is so both geographically and because it is conducted among a pagan people. On the other hand, religious aid and missionary service rendered by British and Continental societies to foreign residents in the colonies cannot be classed as foreign missions, however distant may be the scene of operations from the home land. Work among the Protestant peoples of Europe by British or American societies should not, for similar reasons, be regarded as foreign missions. Geographically it may belong to foreign rather than home missions, but it is simply in the line of cooperation on the part of British and American Christians with the agencies of Christian evangelism already active under the direction of local churches in the Protestant nations of Europe.

"As regards Papal Europe, the question is more difficult. It may be said that inasmuch as evangelical missions conducted by societies of Great Britain and the United States among Oriental Christian Churches in Western Asia and Egypt, and among Roman Catholics in Mexico, Central and South America, are counted as foreign by almost common consent, therefore evangelical missions among the Roman Catholic or Greek Orthodox peoples of Europe should be so considered. This would introduce the McAll Mission, and numerous other societies organized to conduct evangelical work in France, Belgium, Spain, Italy, Austria, and elsewhere, into the list of recognized foreign missionary agencies. The point is not important except for purposes of classification. Such missions lose nothing of dignity or usefulness if classed by themselves under the caption of Evangelical Missions to Papal Europe. This seems to be far the more appropriate designation, leaving the term 'foreign missions' to be used in its ordinary and commonly interpreted sense, as referring to countries outside the bounds of Christendom. A possible, though confessedly arbitrary exception might be made in favor of those foreign missionary societies which conduct work in Papal Europe as a long-established feature of their operations. In our own country this would apply, among others, to the American Board, the Baptist Missionary Union, and the Methodist Episcopal Society.

"2. What is a foreign missionary society? is another essential point to be considered. No difficulty arises concerning agencies organized exclusively to do the work of foreign missions as outlined in the previous paragraphs—administering funds given for such a purpose, sending out missionaries, initiating and conducting missionary operations, founding churches and institutions, and otherwise fulfilling the varied aims of mission effort. Nor does it occasion any embarrassment if home and foreign missions are both included under one administration, in case separate accounts are kept and distinctive data can be given. There are, however, certain societies, agencies, and institutions whose service to foreign missions is undoubted, and yet so partial, specialized, indirect, or merely co-operative, that the question arises at once whether they may properly be placed in the list of distinctively foreign missionary societies.

"The Bible Societies, the Tract and Literature Societies, the United Society of Christian Endeavor, the Epworth Leagues, the Student Volunteer Movement, the International Committees of the Young Men's Christian Association and the Young Women's Christian Association, medical and educational organizations, brotherhoods and others, societies for work among seamen and among Jews, philanthropic specialties like that of the Pundita Ramabai in India, and numerous efforts on behalf of famine victims, orphans, and others, with a considerable number of organizations, foreign missionary in title and purpose, but simply rendering financial or other aid to existing societies—these varied and valuable activities for the extension of the Kingdom of Christ throughout the world demand recognition, and yet should they be counted as strictly and technically foreign missionary societies? Two courses are open: either we may use the expression 'foreign missionary society' in an all-inclusive and elastic sense, or we may differentiate and classify, giving to different organizations a place in separate lists, expressive of their various, direct, indirect, or co-operative relationships to the foreign missionary enterprise. We have chosen for our present purpose the latter alternative, naming three classes of societies, as follows:

"Class 1. Societies directly engaged in conducting foreign missions.
"Class 2. Societies indirectly co-operating or aiding in foreign missions.

"Class 3. Societies or institutions independently engaged in specialized effort in various departments of foreign missions."

It should be noted, therefore, that the following summaries relate only to Protestant missions of the so-called evangelical type. Of course the complete tables show clearly just what churches and religious bodies are included. We should therefore have to add the results. of Roman Catholic missions and those of several other religious organizations to get at the magnitude of American Christian Foreign Missions, and make still further additions to get at the amount of missionary activity carried on in the name and prompted by the impulse of religion. Notwithstanding the limitations of the figures presented by the Conference Committee of the Ecumenical Congress, they point to a social fact of such magnitude and to the direction that so large a fund of our social activity takes that they cannot fail to interest many and stimulate efforts to get more complete data. We reproduce the more important summaries as follows:

STATISTICAL SUMMARY OF FOREIGN MISSIONS THROUGHOUT THE WORLD.

EVANGELISTIC.

Statistics of the Income, Staff, and Evangelistic Returns of Missionary Societies.

COMBINED	TOTALS	OF	CT.ASSES	T	TT	AND	TTT.

	NATIONAL OR CONTINENTAL DIVISIONS.					
	Class I.	Class II.	Class III.	Totals.		
Number of societies	249	98	102	449 ¹		
Income from home and foreign sources	\$17,161,092	\$1,227,731	\$ 737 , 297	\$19,126,120 ⁸		
Ordained missionaries	4,953	74	36	5,063		
Physicians—Men	4,933 42I	11	52	484		
Women	203		15	218		
(men)	1,244	69	157	1,470		
(men)	3,450	54	63	3,567		
Unmarried women not physicians	3,119	85	199	3,403		
Total of foreign missionaries	13,607	1,255	598	15,460		
NATIVE HELPERS.						
Ordained natives Unordained natives—preachers, teachers. Bible-women and	4,029	9	15	4,053		
other helpers Total of ordained and unordained	69,300	3,207	492	72,999		
native helpers	73,615	3,216	507	77,338		
STATIONS.		1		f		
Principal stations	5,233 25,586	145 541	193 120	5,57 I 2 6,247		
CHURCHES.	İ			l		
Organized churches	10,993	17	29	11,039		
Total number of communicants.	1,289,298	25,561	2,825	1,317,684		
Additions during the last year	83,895	37	254	84,186		
SUNDAY-SCHOOLS.						
Sunday-schools	14,940	14	78	15,032		
Total Sunday-school membership	764,684	1,150	6,094	771,928		
CONTRIBUTIONS.	1					
Total of native contributions	\$1,833,981	\$1,225	\$6,551	\$1,841,757		
NATIVE CHRISTIANS.						
Total of native Christian com- munity, including, besides com-						
municants, non-communicants of all ages	4,327,283	76,328	10,625	4,414,236		

WOMEN'S SOCIETIES. (Special Summaries representing Woman's Share in the World Totals given above.)

	NATIONAL OR CONTINENTAL DIVISIONS.						
Number of societies	Class I.	Class II.	Class III.	Totals.			
sources	\$2,361,181	\$12,289	\$126,647	\$2,500,117			
Ordained missionaries	48 6 138		1 8 5	49 14 143			
(men) Married women not physicians. Unmarried women not physicians Total of foreign missionaries NATIVE HELPERS.	9 355 1,490 2,092	9 9	1 2 130 150	10 357 1,629 2,251			
Ordained natives	25		1	26			
other helpers Total of ordained and unordained	4,736	7	35	4,778			
native helpers	4,761	7	36	4,804			
Principal stations	637 8 7 2		23	660 872			
Remaining statistics cannot be separated from the general totals.							

EDUCATIONAL Statistics of Elementary, Academic, Medical, and Industrial Instruction

	Number	Students	Instructors	Total.
Universities and Colleges Theological and Training Schools . Boarding and High Schools and	93 358	33,139 8,347	2,275 3,558	35,414 11,905
Seminaries	857	48,851	34,297	83,148
Industrial Training Institutions and Classes	167	6,892	2,486	9,378
Classes	63	370 2,251 ¹	219	589
Kindergartens Elementary or Village Day Schools	127 18,742	2,251 ¹ 616,722	2,251 ¹ 287,720	4,502 904,442
Totals	20,407	716,572	332,806	1,049,378

 $^{^{\}rm 1}$ In the absence of definite information in the returns as to the sex of pupils in kindergartens, it has been estimated that about one-half are boys.

¹ If the number of women's auxiliary societies (88), not included in the total (449) of societies given above under Classes I, II, III, be added to that number, the grand total of all the missionary societies of the world, both independent and auxiliary, will reach 537, but all other data in the "Combined Totals of Classes I, II, and III," remain as given above.

2 in reducing the income of European societies to United States ourrency, the English pound sterling has been estimated at \$4.90, the Danish, Norwegian, and Swedish crown at 26 cents, the Dutch florin at 40 cents, the German mark at 24 cents, the Finuish mark at 19 cents, and the French franc at 20 cents. Indian rupees have been reckoned at three to the dollar.

MEDICAL

Statistics of Hospitals, Dispensaries, and Patients Treated Annually.

I. HOSPITALS AND DISPENSARIES.

Location.	Number of Hospitals.	Number of Dis- pensaries.	Hospital In- patients.	Total of Individual Patients.	Total Number of Treat- ments,	
Africa Alaska Arabia Burma Canada and Labrador Ceylon China Formosa India Japan Korea Madagascar Malaysia Mexico Oceania Palestine Persia Siam and Laos South America Syria	40 3 1 7 9 4 124 2 106 7 9 3 2 1 1 10 5 5 5 6	103 4 4 9 8 10 240 3 250 16 13 9 5 4 2 20 13 9 5 16	4,909 191 	177,794 	441, 239 25,676 52,296 3,245 1,700,452 17,524 2,356,731 66,703 70,259 34,476 15,693 2,885 223,281 101,017 26,975 4,041 91,812 80,003	
Proportionate estimate for 96 hospitals and 147 dispensaries not reporting 1)	355	753	73,741 19,964	36,804 2,158,349 421,302	5,383,934	
Totals	355	753	93,705	2,579,651	6,647,840	

1 The following Hospitals and Dispensaries included in the 355 and 753 mentioned above failed to report statistics: Hospitals. Dispensaries. 46 25 2 4 Burma . . 2 6 7 Ceylon 2 China 20 31 Formosa..... 1 29 6 23 3 3 Madagascar I Malaysia Mexico..... 1 I 1 2 Palestine Persia T 1 I

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The Legal Status of Labor Organizations.—An important event in the labor world has been the recent opinion of Judge Truax in the Appellate Division of the New York Supreme Court, in dissolving an injunction which had been secured by the National Protective Association of Steam Fitters restraining the Enterprise Association of Steam Fitters and other organizations from interfering with members of the first mentioned organization in securing and retaining work. The court said that every workman has the unquestioned right to say for whom and with whom he will work, and that the employer has a similar right to say whom he will employ. The right, if it exists at all, is reciprocal, and if it is once destroyed, personal liberty is destroyed also. The implication of this principle is declared to be that neither employer nor employed, if possessed of this right of free action and free choice in their individual capacities, can lose it when acting with others clothed with an equal right. Employers may therefore refuse to employ members of labor organizations, and laborers, on their part, decline to work for employers who engage non-union men. As between two labor organizations, the opinion continued, it was entirely competent for one to secure the discharge of members of the other, in order to obtain places for its own members. The court did not follow out this line of reasoning to its logical end, and by judicial opinion confirm the legality of the black list. Such, however, is the plain implication of its statement that employers may refuse to employ men either as individuals or as members of a labor organization. Labor circles are not a little agitated over this decision, which, although enlarging the field of privilege for the unions, is, in their opinion, fraught with the most sinister significance in its enunciation of similar rights as belonging to the employer. If the rule of logic is to guide the decisions of our courts, we may expect to see the trade union dissolved as being a combination in restraint of trade, and as such plainly offending against the letter and spirit of anti-monopoly legislation. not at all certain that the unions whose restrictions as to membership and conditions of employment are burdensome and offensive not only to the majority of outside workers but also to many of their own members, would be able without substantial modification of their regulations in the direction of greater liberality, to secure sufficient popular support, to resist successfully such a direct attack by the judiciary upon their right to exist in their present form.

National Supremacy and the Tendency to Consolidation in the Iron and Steel Industry.—An interesting development in the steel industry has been the increasing vogue of open-hearth steel, which bids fair to surpass the Bessemer product in the world's produc-

tion. In general, Bessemer steel is preferred for rails, wire, hoops, bars and sheets, where rigidity instead of tensile strength is the quality sought for. Open-hearth steel, on the other hand, is chiefly desired for its greater tensile strength and more uniform quality, and is therefore in demand for ship building. Until recently, although open-hearth steel was produced in large amounts in Great Britain, the process was little used in the United States, as compared with the Bessemer process, the reason being the abundance of Bessemer ores in this country, and the greater cost of the acid open-hearth process, which could not extract the impurities from low-grade ore. The introduction of the basic process into open-hearth working, however, is rapidly changing these conditions. This enables the use of scrap and of pig iron of a poorer grade than is possible in the basic process, in which the excess of phosphorus passes into the slag.

The steel made by the open-hearth process, as just remarked, is more uniform in quality than Bessemer steel, to which indeed, for many purposes, on account of its lack of uniformity in texture, wrought iron is preferred. The deposits of low grade ore, especially in the South, are of immense extent, while the day of diminishing returns in the Bessemer mines of the Superior district is already in sight. For this reason the basic open-hearth process has, in recent years, made remarkable progress in the United States. The Iron Age remarks of the situation as follows: "It now stands so high in favor that new open-hearth plants are numerous and important additions are being made to old ones. The only addition to Bessemer capacity in a long time is the plant of the Republic Iron and Steel Company, at Youngstown, Ohio, now approaching completion, and even that is not strictly a new plant, but rather the re-location of an old works. The great demand for steel in the past year, which led to much activity in the erection of open-hearth furnaces, could not restore vitality to quite a number of Bessemer works which had been laid off during the previous depression." The decreasing demand for steel rails is doubtless an important factor in the substitution of the open-hearth process.

This remarkable change in the methods of the steel industry may result in certain readjustments of location and advantage which have not been generally noted. The field for the open-hearth process lies in the South where coal, lime and low grade ore can be more cheaply assembled than at Pittsburg or the lake ports. It will be nothing strange if Birmingham shall in time wrest the supremacy from the northern iron centres. Our international advantage in the iron trade is also lessened by this fact. Spain and Sweden are being rapidly depleted of their Bessemer ores, but the deposits of low grade ores are very

large, abundantly ample to meet all demands for a long time to come. Moreover, Great Britain and the continental producers of steel who have been forced to import the Bessemer ores in increasing amounts, are well supplied with ores suitable for the basic open-hearth process. It would appear that the advantage of the United States in the iron and steel industry, although important, is not likely to increase as fast as was expected, and that the superiority which will be enjoyed by this country will depend rather upon our cheap coal than upon our supplies of iron ore.

The ore association has fixed the price of Lake Superior ore for this year's delivery at \$5.50 per ton, a fact which, in the judgment of men prominent in the iron and steel trade, will make it difficult to lower prices of iron and steel products much below the present level. On the present prices of ore, coke and labor, and the present level of railway rates, pig iron cannot be produced for less than \$15 at many of the furnaces. No substantial reductions in any of these contributory prices are looked for. It is probably true that the price of pig iron is lower in proportion to the cost of production than it was two years ago. In 1898 the ore association made the mistake of fixing the price of ore only twenty-five cents above the low level of 1898. a lower point than would have been warranted by the demand. Coke also ruled at a low price during 1898 and a part of 1899. Wages had not yet risen, the great rise in iron having taken place during 1898-99. after the annual adjustment of the scale with the amalgamated iron and steel association. These facts account for the great profits made in the iron and steel industry during that period. During the past year, however, readjustments in prices of labor and materials have been taking place, and the day of large profits, especially for those companies who must buy the raw material, is about over. This does not apply to some of the iron and steel combinations, especially the Federal Steel and the American Steel and Wire companies, who are large owners of ore and coal lands, and therefore, with the exception of their wage scale, in large measure exempt from the depressing influence of high prices of raw material. The Carnegie Company has long owned the sources of its raw material. Nothing is more likely to come about in the industrial world than a further consolidation of iron and steel interests in the direction of larger control of the raw material. Without this advantage, the benefits of the control of prices which the combinations have secured must be divided with the iron and coke companies. The only thing, apparently, which will interfere with such a consolidation is the fear of hostile legislation.